Quick Review

To calculate a percent of a quantity, first write the percent as a decimal. Then calculate the decimal value of the quantity.

To find 140% of $850, write 140% as a decimal. \(140\% = \frac{140}{100} = 1.40\)
Then, \(140\% \text{ of } 850 = 1.40 \times 850\)

\[= 1190\]

This answer can be illustrated on a number line.

Percents that are less than 1% can also be illustrated on a number line.

\(1\% = \frac{1}{100} = 0.01\)

Use this pattern:

\[
\begin{align*}
100\% &= 1.0 \\
10\% &= 0.10 \\
1\% &= 0.01 \\
0.25\% &= 0.0025
\end{align*}
\]

Practice

1. One hundred chart represents 100%. Shade hundred charts to show each percent.
   
   a) 125%  
   
   b) 150%  
   
   c) 200%  

2. a) Write 175% as a decimal and draw a number line to show this percent.
   
   \(175\% = \underline{\quad}\)
   
   b) Write 0.5% as a decimal and draw a number line to show this percent.
   
   \(0.5\% = \underline{\quad}\)

3. Write each percent as a decimal.
   
   a) 230% \underline{\quad}\n   
   b) 185% \underline{\quad}\n   
   c) 324% \underline{\quad}\n   
   d) 0.74% \underline{\quad}\n   
   e) 0.7\% \underline{\quad}\n   
   f) 0.09\% \underline{\quad}\n
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4. Write each fraction as a percent.
   a) $\frac{1}{2}$
   b) $\frac{3}{2}$
   c) $\frac{5}{2}$
   d) $\frac{1}{100}$
   e) $\frac{1}{200}$
   f) $\frac{3}{200}$

5. a) Draw a square with sides 1 cm long.

   b) Redraw the square so the sides are 200% of the original length.
      The new square has sides of length ________ cm.

6. a) Find the percent of each number. Draw number line to illustrate each answer.
   i) 200% of 40
   ii) 20% of 40
   iii) 2% of 40

   b) Describe the pattern in the answers to part a).

   c) Use the pattern in part a) to find each percent of 40.
      i) 2000% of 40 = ________  ii) 0.2% of 40 = ________

7. A total of 45 412 runners participated in the Vancouver Sun Run. Of these runners, 0.85% completed the run in under 40 min.

   How many runners completed the run in under 40 min? ________________________

   In fact, 0.13% of the runners completed the run in less than 34 min.

   How many runners were in this group? ________________________

8. Which is the greater amount of money, 120% of 0.3% of $1000 or 120.3% of $1000? Explain.
Quick Review

To calculate a percent of a quantity, first write the percent as a decimal. Then calculate the decimal value of the quantity.

To find 140% of $850, write 140% as a decimal. $140 \div 100 = 1.40$
Then, 140% of $850 = 1.40 \times $850 = $1190

This answer can be illustrated on a number line.

Percents that are less than 1% can also be illustrated on a number line.

1% = $\frac{1}{100} = 0.01$

Use this pattern:

100% = 1.0
10% = 0.10
1% = 0.01

0.25% = 0.0025

1. One hundred chart represents 100%. Shade hundred charts to show each percent.

a) 125%

b) 150%

c) 200%

2. a) Write 175% as a decimal and draw a number line to show this percent.

175% = 1.75

b) Write 0.5% as a decimal and draw a number line to show this percent.

0.5% = 0.005

3. Write each percent as a decimal.

a) 230% 2.3

b) 185% 1.85

c) 324% 3.24

d) 0.74% 0.0074

e) 0.7% 0.007

f) 0.09% 0.0009
4. Write each fraction as a percent.
   a) $\frac{1}{2} \quad 50\%$
   b) $\frac{3}{2} \quad 150\%$
   c) $\frac{5}{2} \quad 250\%$
   d) $\frac{1}{100} \quad 1\%$
   e) $\frac{1}{200} \quad 0.5\%$
   f) $\frac{3}{200} \quad 1.5\%$

5. a) Draw a square with sides 1 cm long.

   b) Redraw the square so the sides are 200\% of the original length.
      The new square has sides of length 2 cm.

6. a) Find the percent of each number. Draw number line to illustrate each answer.

   i) 200\% of 40
      \[
      \begin{array}{c|c|c}
      0 & 40 & 80 \\
      \hline
      0\% & 100\% & 200\%
      \end{array}
      \]

   ii) 20\% of 40
      \[
      \begin{array}{c|c|c}
      0 & 8 & 40 \\
      \hline
      0\% & 20\% & 100\%
      \end{array}
      \]

   iii) 2\% of 40
      \[
      \begin{array}{c|c|c}
      0 & 0.8 & 40 \\
      \hline
      0\% & 2\% & 100\%
      \end{array}
      \]

   b) Describe the pattern in the answers to part a).
      Each answer is one-tenth the size of the previous answer.
      
   c) Use the pattern in part a) to find each percent of 40.
      i) 2000\% of 40 = 800
      ii) 0.2\% of 40 = 0.08

7. A total of 45,412 runners participated in the Vancouver Sun Run.
   Of these runners, 0.85\% completed the run in under 40 min.

   How many runners completed the run in under 40 min? \[0.0085 \times 45,412 = 386\]

   In fact, 0.13\% of the runners completed the run in less than 34 min.

   How many runners were in this group? \[0.0013 \times 45,412 = 59\]

8. Which is the greater amount of money, 120\% of 0.3\% of $1000 or 120.3\% of $1000?
   Explain.

   120\% of 0.3\% of $1000 = 1.2 \times 0.003 \times $1000 = $3.60
   120.3\% of $1000 = 1.203 \times $1000 = $1203

   120.3\% of $1000 is the greater amount of money.